REMARKS

Applicant has studied the Office Action dated May 2, 2005, and has made amendments to the claims. Claims 21-40 and 42-82 are pending. Claims 21, 40, 48, 49, 51, 56, 60, 68, 69, and 74 have been amended. Claim 41 has been canceled without disclaimer or prejudice. It is submitted that the application, as amended, is in condition for allowance. Reconsideration and reexamination are respectfully requested.

Claim Objections

Claims 48, 49, 56, 68 and 69 were objected. In response, Applicant has amended these claims as suggested by the Examiner. It is believed that this amendment does not introduce new matter in the application. Therefore, it is respectfully submitted that the objection to the claims should be withdrawn.

Claim Rejections – §112

Claims 21, 50, 51, 56, 60, 69 and 74 were rejected under 35 U.S.C. §112.

Claim 21 has been amended to correct the informality.

Regarding claim 50, it is respectfully submitted that the Examiner has misinterpreted the claim. Claim 50 recites "in any one of 1, 2, 4 and 8" and not "in any one of claims 1, 2, 4 and 8" (emphasis added). Claim 50 refers to the number of columns being 1, 2, 4 or 8. Therefore, claim 50 is not indefinite.

Claims 51 and 56 have been amended to correct the informality. In particular, claim 56 has been amended to recite that for rate matching "coded bits comprising a systematic bit sequence, a first parity bit sequence and a second parity bit sequence" are being inputted.

Claim 60 has been amended to correct the informality. In particular, the phrase "depending upon" has been replaced with "in response to." Claim 60 has been further amended to recite a rate matching method.

Claim 69 has been amended to correct the informality related to the phrase "so as to exclude the first bit." The Examiner noted that claim 69 is further indefinite because of the phrase "alternatively perform the puncturing process." It appears that the Examiner has mis-interpreted the claim. Claim 69 recites "alternately perform the puncturing process" (emphasis added) and not "alternatively." Thus, Applicant submits that claim 69 is not indefinite.

Claim 74 has been amended to correct the indefiniteness related to the phrase "so as to puncture."

As required by the Examiner the claims have been reviewed for conformance to

grammatical and idiomatic usage. Therefore, it is respectfully requested that the rejection of the above claims under §112 be withdrawn.

Claim Rejections – §101, Non-Statutory

Claims 51-55 and 69-82 were rejected under 35 U.S.C. §101 as they were directed to non-statutory subject matter.

Claims 51, 69 and 74 have been amended to recite a method of rate matching for an uplink wireless communication. Therefore, it is respectfully requested that the rejection of these claims, and dependent claims which depend therefrom, under §112 be withdrawn.

Claim Rejections – §103

Claims 40, 42-48, 50-67 and 69-82 were rejected under 35 U.S.C. §103(a) as being unpatentable over Gelblum et al. (USP 6,088,387). This rejection is respectfully traversed.

The Gelblum reference is directed to the combination of turbo code with trellis coding. In particular, the Gelblum reference describes a parity bit selection portion 21 that receives parity bits 17 and 18 from the turbo encoder (See Fig. 1). The output of the parity bit selection portion 21 is provided to the uniform interleaver 22 that also receives the information bit 9 (See Fig. 1). The Gelblum reference teaches the use of an interleaver after a parity bit selection portion.

Claim 40 is directed to rate matching method and recites "interleaving a plurality of turbo coded bits including a plurality of systematic bits, a plurality of first parity bits, and a plurality of second parity bits at an interleaver" and further recites "calculating at least one first shifting parameter value to the first virtual interleaving pattern and at least one second shifting parameter value to the second virtual interleaving pattern."

Claim 40 distinguishes the Gelblum reference in at least two aspects. First, claim 40 performs interleaving of the systematic bits and parity bits before rate matching, whereas the Gelblum performs the opposite. The use of random interleaver 16 in Fig. 1 of the Gelblum reference is different from the 1st interleaver 20 in Fig. 4 of the present application. Also, it should be noted that the interleaver 16 of the Gelblum reference is internally used for turbo coding (i.e., to generate the parity bits) and is different from the uniform interleaver 22. Therefore, the Gelblum reference fails to describe or teach the use of interleaver before rate matching as recited in claim 40.

Second, the Gelblum reference fails to describe or teach the use of at least one first and second shifting parameter values for rate matching. The Examiner noted in the Office Action

that "the method of calculating or computing bit shifting values in a row or column is known in the art." However, such is not correct. For example, the choosing of shifting parameter is important to the substantially uniform puncturing. Unless at least two shifting parameters are used, for example, for puncturing first and second parity bits, respectively, such uniform puncturing cannot be accomplished. The disadvantage of not using such shifting parameters is noted in the Background section (page 4, lines 12-18) of the present application.

Moreover, claim 40 now incorporates the elements of claim 41 which the Examiner noted as allowable if written in independent form to include the base claim and any intervening claims.

Therefore, claim 40, and claims 42-47 and 50 which depend therefrom, distinguish over the Gelblum reference.

Claim 48 (and dependent claim 50) was noted by Examiner to be rejected under 103, but the Office Action did not have any reasons behind the rejection. In response, the application respectfully submits that claim 48 distinguishes over the Gelblum reference for the same reasons stated above with respect to claim 40.

With regard to claim 51, the Examiner noted that "calculating an average or mean repetition or bit repetition are known in the art and common knowledge to most of data transmission systems." Applicant respectfully traverses the Examiner's statement and requests that the evidence be presented which shows the above elements. The unsupported assertion does not constitute a prior art disclosure and is not sufficient to establish a prima facie case of obviousness. In re Rijckaert 9 F.3d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993).

If the Examiner asserts an explicit or implicit teaching or suggestion in the prior art, then the Examiner must indicate where such teaching or suggestion appears in the prior art itself. In re Rijckaert 9 F.3d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993); In re Yates, 663 F.2d 1054, 211 USPQ 1149, 1151 (CCPA 1981).

In the present case, there is no teaching or suggestion of the claimed invention in any of the references, nor is there any indication in any cited reference that calculating an average repetition distance variable value or calculating a shifting parameter for deciding a repetition position per each column as recited in claim 51.

Therefore, claim 51, and claims 52-55 which depend therefrom, distinguish over the Gelblum reference.

Claim 56 recites, inter alia, "comparing a puncturing rate per column of each virtual interleaving pattern with 50% of a reference puncturing rate" and further recites "calculating a different puncturing distance q per column of each virtual interleaving pattern, depending upon

whether the puncturing rate per column is equal to or greater than the reference puncturing rate and whether the puncturing rate per column is less than the reference puncturing rate."

The Gelblum reference fails to describe or teach the above limitation. Applicant respectfully traverses the Examiner's statement and requests that the evidence be presented which shows the above elements. The unsupported assertion does not constitute a prior art disclosure and is not sufficient to establish a prima facie case of obviousness. In re Rijckaert 9 F.3d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993).

The same is also true for claim 60 which recites similar limitations as claim 56.

Regarding claim 74, as amended, the Gelblum reference fails to describe or teach "determining first and second shifting parameters for the first and the second parity bit sequences, respectively." These limitations are similar to those cited in claim 40 and the same reasoning applies here. Moreover, claim 74 now incorporates the elements of claim 41 which the Examiner noted as allowable if written in independent form to include the base claim and any intervening claims.

Therefore, claim 74, and claims 75-82 which depend therefrom, distinguish over the Gelblum reference.

It is noted with appreciation that claims 33-39 are indicated as being allowed. It is believed that this amendment does not introduce new matter in the application.

Conclusion

Applicant respectfully requests that the Examiner reconsider and withdraw the claim rejection and objection and issue a notice of allowance. No amendment made was related to the statutory requirements of patentability unless expressly stated herein; and no amendment made was for the purpose of narrowing the scope of any claim, unless Applicant has expressly argued herein that such amendment was made to distinguish over a particular reference or combination of references.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California, telephone number (213) 623-2221 to discuss the steps necessary for placing the application in condition for allowance.

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Respectfully submitted,

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